CLAIMS

Claim 1 (Currently Amended): A solid component of catalyst for [[the]] (co)polymerization of ethylene, comprising titanium, magnesium, chlorine, an organo-oxygenated protic compound D_p, and a neutral electron-donor aprotic compound D, in the following molar ratio ranges:

Mg/Ti = 1.0-50;   D/Ti = 1.0-15;

Cl/Ti = 6.0-100; D_p/D = 0.05-3.

Claim 2 (Previously Presented): The solid component according to claim 1, additionally comprising an inert granular solid, in a quantity ranging from 10 to 90% by weight with respect to the total weight of the solid component.

Claim 3 (Currently Amended): The solid component according to claim 2, wherein said inert granular solid [[I]] is in a quantity ranging from 25 to 50% by weight.

Claim 4 (Currently Amended): The solid component according to any of the previous claims claim 2, wherein said inert granular solid [[I]] is selected from granular inorganic solids included in the group consisting of: silica, titania, silico-aluminates, calcium carbonate[[,]] and magnesium chloride[[,]]; and the having average sizes size of the inert granule ranging solid is from 10 μm to 300 μm.

Claim 5 (Currently Amended): The solid component according to claim 4, wherein said solid I consists of insert granular solid comprises microspheroidal silica having an average diameter ranging from 20 to 100 μm, a BET surface area ranging from 150 to 400 m^2/g, a total porosity equal or higher than 80% and an average pore radius of 50 to 200 Å.

Claim 6 (Currently Amended): The solid component according to ~~any of the previous claims~~ claim 1, ~~characterized by the following~~ wherein the molar ratio ranges ~~among the constituents~~ are:

Mg/Ti = 1.5-10;   D/Ti = 3.0-8.0;

Cl/Ti = 10-25; D_p/D = 0.1-2.0.

Claim 7 (Currently Amended): The solid component according to ~~any of the previous claims~~ claim 1, wherein said ratio D_p/D ranges from 0.2 to 1.0

Claim 8 (Currently Amended): The solid component according to ~~any of the previous claims~~ claim 1, wherein said organo-oxygenated protic compound D_p ~~is selected from compounds~~ comprises a compound having [[the]] following formula (II):

$$R\text{-}(A)_m\text{-}OH \qquad (II)$$

wherein:

R is an aliphatic, cyclo-aliphatic or aromatic radical, optionally fluorinated, containing from 1 to 30 carbon atoms,

A is one of ~~selected from~~ divalent groups having the formula CR^1R^2, CO, SCO and SO, ~~preferably CO or CR^1R^2,~~ wherein each R^1 and R^2 is independently hydrogen or an aliphatic or aromatic group having from 1 to 10 carbon atoms;

m is 0 or 1.

Claim 9 (Currently Amended): The solid component according to ~~any of the previous claims~~ claim 1, wherein said organo-oxygenated protic compound D_p is selected from the

group consisting of aliphatic or aromatic, preferably aliphatic, alcohols and organic acids, having from 2 to 10 carbon atoms.

Claim 10 (Currently Amended): The solid component according to any of the previous claims claim 1, wherein said aprotic electron-donor compound D is a coordinating organic compound having from 3 to 20 carbon atoms, comprising at least one heteroatom selected from of non-metallic compounds of groups 15 and 16, preferably at least one oxygen atom linked to a carbon atom.

Claim 11 (Currently Amended): The solid component according to any of the previous claims claim 1, wherein said electron-donor compound D is at least one selected from compounds the group consisting of the groups of ketones, ethers, esters, amines, amides, thioethers, and xanthates, linear or cyclic, and aliphatic or aromatic, having from 4 to 10 carbon atoms.

Claim 12 (Currently Amended): The solid component according to any of the previous claims 10 or 11 claim 10, wherein said compound D is selected from the group consisting of dibutyl ether, dihexyl ether, methylethyl ketone, diisobutyl ketone, tetrahydrofuran, dioxane, ethyl acetate, and butyrolactone, preferably tetrahydrofuran.

Claim 13 (Currently Amended): The solid component according to any of the previous claims claim 1, wherein said titanium is present in a quantity ranging from 1 to 10% by weight.

Claim 14 (Currently Amended): A process for [[the]] preparation of [[a]] the solid component according to ~~any of the previous claims from 1 to 13~~ claim 1, comprising ~~the following steps~~ in succession: (a) ~~formation~~ forming of a mixture and dissolution, in aprotic electron-donor compound D, of a magnesium chloride and a titanium compound having formula (I):

$$Ti^V(OR^3)_aX_{(v-a)} \qquad (I)$$

wherein each R^3 represents a hydrocarbyl or acyl radical having from 1 to 15 carbon atoms;

each X is selected from the group consisting of chlorine, bromine [[or]] and iodine; v is 3 or 4, and represents [[the]] an oxidation state of titanium,

a is a number ranging from 0 to v, with a molar ratio between magnesium and titanium ranging from 1/1 to 50/1;

(b) ~~partial separation of~~ partially separating the compound D from said mixture prepared in ~~step~~ (a) until a residue is obtained, solid at room temperature, wherein the D/Ti ratio ranges from 1.5 to 40,

(c) ~~formation of~~ forming a suspension of said solid residue in a liquid hydrocarbon medium,

(d) ~~addition to~~ adding said suspension of an organo-oxygenated protic compound D_p, in ~~such~~ a quantity that the molar ratio D_p/D ranges from 0.1 to 1.2 and maintaining the mixture for a period varying from 5 minutes to 5 hours.

Claim 15 (Currently Amended): The process according to claim 14, wherein, in ~~step~~ (a), comprising adding an inert granular solid, ~~is also added~~.

Claim 16 (Currently Amended): The process according to ~~the previous~~ claim 15, wherein said ~~inert solid I~~ granular solid is selected from ~~granular inorganic solids included in~~ the group consisting of: silica, titania, silico-aluminates, calcium carbonate, and magnesium chloride~~, having~~; the granular solid has an average granule ~~sizes~~ size ranging from 10 μm to 300 μm.

Claim 17 (Currently Amended): The process according to ~~the previous claims 15 or 16~~ claim 15, wherein said inert granular solid ~~I consists of~~ has microspheroidal silica having an average diameter ranging from 20 to 100 μm, a BET surface area ranging from 150 to 400 m^2/g, a total porosity equal or higher than 80% and an average pore radius of 50 to 200 Å.

Claim 18 (Currently Amended): The process according to ~~any of the previous claims from 14 to 17~~ claim 14, wherein said titanium compound having formula (I) is selected from the group consisting of titanium chlorides, bromides, alcoholates and carboxylates.

Claim 19 (Currently Amended): The process according to ~~any of the previous claims from 14 to 17~~ claim 14, wherein said compound having formula (I) in ~~step~~ (a) is titanium trichloride.

Claim 20 (Currently Amended): The process according to ~~any of the previous claims from 14 to 19~~ claim 14, wherein said magnesium chloride is in amorphous form.

Claim 21 (Currently Amended): The process according to ~~any of the previous claims from 14 to 20~~ claim 14, wherein, in said ~~step~~ (a), the atomic ratio between magnesium and titanium ranges from 1.0 to 50 and the ratio (D moles)/(Ti atoms) ranges from 5 to 100.

Claim 22 (Currently Amended): The process according to ~~any of the previous claims from 14 to 21~~ claim 14, wherein said ~~step~~ (a) is carried out at a temperature ranging from room temperature to [[the]] a boiling point of the donor compound D, until at least 80% of said compounds of Ti and Mg ~~have been~~ are dissolved.

Claim 23 (Currently Amended): The process according to ~~any of the previous claims from 14 to 22~~ claim 14, wherein said ~~step~~ (b) is carried out by ~~means of~~ evaporation~~, preferably by spray-drying~~.

Claim 24 (Currently Amended): The process according to ~~any of the previous claims from 14 to 23~~ claim 14, wherein the molar ratio D_p/D in said ~~step~~ (d) ranges from 0.2 to 1.2.

Claim 25 (Currently Amended): The process according to ~~any of the previous claims from 14 to 24~~ claim 14, wherein said ~~step~~ (d) is carried out by heating the mixture to a temperature ranging from 40 to 100°C, for a period of time varying from 5 minutes to 5 hours.

Claim 26 (Currently Amended): The process according to claim 25, wherein the reaction mixture in said ~~step~~ (d) is heated to a temperature of 60 to 80°C, for a period ranging from 5 to 60 minutes.

Claim 27 (Currently Amended): A process for [[the]] preparation of a solid component according to ~~any of the previous claims from 1 to 13~~ claim 1, comprising reacting ~~the reaction~~ in an inert liquid medium, [[of]] a solid precursor ~~containing~~ comprising

titanium, magnesium, chlorine, an aprotic electron-donor compound D and optionally an inert

granular solid ~~compound I~~, in [[the]] following molar ratios ~~between each other~~:

$Mg/Ti = 1-50$; $D/Ti = 2.0-20$; $Cl/Ti = 6-100$;

and wherein said inert granular solid [[I]] is in a quantity ranging from 0 to 95%,

with protic organo-oxygenated compound D_p, in [[such]] a quantity that the molar

ratio D_p/D ranges from 0.1 to 1.2, until equilibrium is reached.

Claim 28 (Currently Amended): The process according to claim 27, wherein said

~~solid precursor is characterized by the following~~ molar ratios are:

$Mg/Ti = 1.5-10$; $D/Ti = 4.0-12$; $Cl/Ti = 10-30$

and said inert granular solid [[I]] is in a quantity ranging from 20 to 60% by weight

with respect to the total weight of the precursor.

Claim 29 (Currently Amended): The process according to ~~any of the previous claims~~

~~27 and 28~~ claim 27, wherein the molar ratio D_p/D ~~in said step~~ ranges from 0.2 to 1.2.

Claim 30 (Currently Amended): The process according to ~~any of the previous claims~~

~~from 27 to 29~~ claim 27, wherein said reaction is carried out at a temperature ranging from 40

to 100°C, for a period varying from 5 minutes to 5 hours.

Claim 31 (Currently Amended): The process according to ~~the previous~~ claim 30,

wherein said reaction is carried out at a temperature ranging from 60 to 80°C, for a period of

5 to 60 minutes.

Claim 32 (Currently Amended): A catalyst for [[the]] (co)polymerization of ethylene, ~~which~~ wherein the catalyst is obtained by ~~means of contact and~~ a process comprising reaction of said solid component according to ~~any of the previous claims from 1 to 13~~ claim 1, with a co-catalyst comprising a hydrocarbyl compound of a metal selected from the group consisting of Al, Ga, Mg, Zn and Li, wherein the atomic ratio between the metal in the co-catalyst and titanium in the solid component of catalyst ranges from 10:1 to 500:1.

Claim 33 (Previously Presented): The catalyst according to claim 32, wherein the atomic ratio between the metal in the co-catalyst and titanium in the solid component of catalyst ranges from 50:1 to 200:1.

Claim 34 (Currently Amended): The catalyst according to claim 32 ~~or 33~~, comprising titanium, magnesium, aluminum and chlorine, wherein said co-catalyst comprises an alkylic organometallic compound of aluminum.

Claim 35 (Currently Amended): The catalyst according to claim 34, wherein said organometallic compound of aluminum is ~~selected from~~ at least one of aluminum tri-alkyls ~~containing~~ comprising from 1 to 10 carbon atoms in each alkyl group.

Claim 36 (Currently Amended): The catalyst according to ~~any of the claims from 32 to 35~~ claim 32, wherein said solid component is activated before contact with said co-catalyst, by reaction with an aluminum alkyl or alkyl chloride represented by [[the]] following general formula (III):

$$AlR'_nX_{(3-n)} \qquad\qquad (III)$$

wherein: R' is a linear or branched alkyl radical containing from 1 to 20 carbon atoms, X is ~~selected from~~ one of H and Cl~~, preferably Cl,~~ and [["n"]] $\underline{n}$ is a decimal number having ~~values~~ a value ranging from 1 to 3~~, preferably from 2 to 3~~; and

~~in such a quantity that the~~ an $Al/(D+D_p)$ ratio between the aluminium moles in said compound having formula (III) and the total of D and D_p moles in said solid component, ranges from 0.1 to 1.5.

Claim 37 (Previously Presented): The catalyst according to claim 36, wherein said R' in formula (III) is a linear or branched aliphatic radical, having from 2 to 8 carbon atoms.

Claim 38 (Currently Amended): The catalyst according to ~~anyone of the previous claims 36 and 37~~ claim 37, wherein said $Al/(D+D_p)$ ratio ranges from 0.2 to 1.3~~, preferably from 0.3 to 1.0~~.

Claim 39 (Currently Amended): The catalyst according to ~~any of the previous claims from 36 to 38~~ claim 36, wherein said solid component is activated ~~in two successive steps~~ by a first reaction ~~in the first step~~ with an aluminum trialkyl (n = 3 in formula (III)), and ~~in the second step~~ successively in a second reaction with an aluminum dialkyl chloride (n = 2, X = Cl, in formula (III)), in ~~such~~ a quantity that the overall molar ratio $Al/(D+D_p)$ ranges from 0.1 to 1.3~~, preferably from 0.4 to 1.1~~.

Claim 40 (Currently Amended): The catalyst according to claim 38, wherein, in said first ~~step~~ reaction, the molar ratio $AlR_3/(D+D_p)$ ranges from 0.1 to 0.4 and, in the second ~~step~~ reaction, the molar ratio $AlR_2Cl/(D+D_p)$ ranges from 0.2 to 0.6.

Claim 41 (Currently Amended): A process for [[the]] (co)polymerization of ethylene, comprising reacting ethylene and optionally at least one alpha-olefin, under ~~suitable~~ a polymerization ~~conditions~~ condition, in the presence of said catalyst according to ~~any of the previous claims from 32 to 40~~ claim 32.

Claim 42 (Currently Amended): The process according to claim 41, ~~carried out in gas phase with the~~ comprising carrying out a fluid-bed method, wherein a gaseous stream of ethylene and optional alpha-olefin is reacted in the presence of a quantity of catalyst, wherein ~~the~~ a titanium concentration ranges from 1 to 5 ppm by weight with respect to [[the]] a consolidated production, at a temperature ranging from 70 to 115°C, and at a pressure ranging from 500 to 1000 kPa.

Claim 43 (Currently Amended): The process according to ~~the previous~~ claim 42, wherein said stream is introduced from the bottom of the polymerization reactor, partially comprising a stream in liquid form.

Claim 44 (Currently Amended): The process according to ~~anyone of~~ claim 42 ~~and 43,~~ ~~in the presence of a catalyst according to any of the previous claims from 37 to 41,~~ wherein said gaseous stream comprises ethylene and alpha-olefin.

Claim 45 (Currently Amended): The process according to ~~any of the preceding claims from 41 to 44~~ claim 41, wherein the molar ratio with ethylene ranges from 0.1 to 1.0.

Claim 46 (Currently Amended): The process according to ~~any of the preceding claims from 41 to 45~~ claim 41, wherein said α-olefin is ~~selected from~~ one of 1-butene, 1-

hexene and 1-octene and is in ~~such~~ a quantity that the molar ratio with ethylene ranges from 0.1 to 0.4.

Claim 47 (Currently Amended): The process according to ~~any of the preceding claims from 41 to 46~~ claim 41, [[for]] comprising obtaining linear polyethylene having a density ranging from 0.915 to 0.950 g/ml,

Claim 48 (Currently Amended): The process according to ~~any of the preceding claims from 42 to 46 for~~ claim 42, comprising obtaining linear polyethylene having a density lower than 0.915 g/ml~~, preferably ranging from 0.900 to less than 0.915 g/ml, comprising the copolymerization~~ and copolymerizing, in gas phase, [[of]] a gaseous mixture ~~including~~ comprising ethylene and at least one alpha-olefin having from 4 to 10 carbon atoms.

Claim 49 (Previously Presented): The process according to claim 48, wherein the gaseous mixture of ethylene and the at least one alpha-olefin is reacted in the presence of a sufficient quantity of catalyst, at a temperature ranging from 70 to 95°C, and a pressure ranging from 500 to 1000 kPa.

Claim 50 (Currently Amended): The process according to ~~any of the previous claims 48 and 49~~ claim 48, wherein said alpha-olefin is ~~selected from~~ one of 1-butene, 1-hexene and 1-octene, and is in ~~such~~ a quantity that the molar ratio with respect to ethylene ranges from 0.1 to 0.4.

Claim 51 (Currently Amended): The process according to ~~any of the previous claims from 41 to 50~~ claim 41, wherein said catalyst is formed *in situ* inside the reactor.

Claim 52 (Currently Amended): The process according to ~~any of the previous claims from 41 to 51~~ claim 41, wherein said linear polyethylene has a weight average molecular weight M_w ranging from 20,000 to 500,000 and a MWD (M_w/M_n) distribution ranging from 2.5 to 4.